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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/309,484	09/02/94	HIAIT	A 207145
HM32/0831			EXAMINER
LERNER DAVID LITTENBERG KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD NJ 07090			ART UNIT PAPER NUMBER 1623 25
DATE MAILED:			08/31/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☒ Responsive to communication filed on 6/25/97 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), — days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892. 2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449. 4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474. 6. ☒ PTOL-413 10/07/97

Part II SUMMARY OF ACTION

1. ☒ Claims 1-38 are pending in the application.
- Of the above, claims 32-38 are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-31 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with Informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other _____

08/300, 484
PTOL-328 (Rev. 2/83)

EXAMINER'S ACTION

Applicant's election of Group I, claims 1-31 in Paper No. 14, submitted October 27, 1995, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (M.P.E.P. § 818.03(a)).

Claims 32-38 stand withdrawn from further consideration by the examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention. Election was made **without** traverse in Paper No. 14.

Applicant's amendments and changes to the claims are seen to be sufficient for the examiner to withdraw the objection to claims 30 and 31 and claim 9, rejected under 35 USC 112, 2nd paragraph.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over each of the Hyman patent 5,436,143 of record and the WO 90/01064 ('064), newly cited.

Claims 1-29 are drawn to a process for the preparation of a polynucleotide. Claims 30 and 31 are product by process claims which depend from claim 1.

The Hyman et al. patent discloses a blocked method for the synthesis of oligonucleotides. Applicant's attention is directed to Figure 1, which schematically delineates a sequence of specific steps which are seen to render the instantly claimed method for synthesizing an oligonucleotide prima facie obvious.

The identification of the primers utilizable in the prior art process are set forth in columns 5 and 6. The steps of the instantly claimed method are seen to be closely analogous to the specific steps of the Hyman et al. Patent, see claim 1, wherein the following steps comprise the prior art method:

- 1) combining an oligonucleotide primer and a blocked nucleotide (or precursor thereof), in the presence of a chain extending enzyme,
- 2) removing the blocking group,
- 3) repeating the cycle.

In column 2 of the Hyman patent, it is noted that the use of solid supports in the "blocked" method is known, see lines 44-59. In columns 11-13, removable blocking groups for the 5'-nucleoside triphosphate are disclosed. In column 16, lines 19-54, the interchangeableness of TdT and the preferred chain extending enzyme in the Hyman patent, which is RNA ligase is set forth. The compounds disclosed in this prior art patent which are made by the process set forth therein are seen to render the instantly claimed compositions obvious to one having ordinary skill in the art at the time the invention was made.

The '064 patent provides a method for the synthesis of polynucleotides wherein the 5'-end of an oligonucleotide is treated with terminal deoxynucleotide transferase, TdT, and a selected triphosphate to add a homopolymeric sequence to the 3'-ends. This reference establishes the nexus between the use of TdT and triphosphate nucleoside compounds in the synthesis of polynucleotide compounds. Applicant's attention is directed to Figures 1, 2 and 3, as well as the disclosure on page

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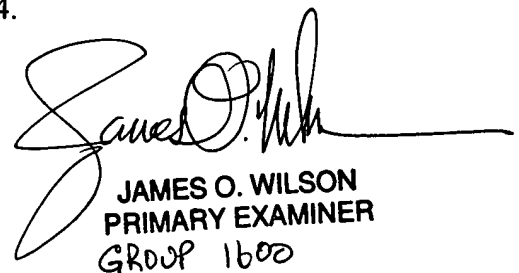
3, line 25 through page 4, line 21. The open ended disclosure of the method as set forth in the '064 patent is seen to encompass the invention as it is instantly claimed. It is noted that the amplification process of the prior art renders the instantly claimed synthesis steps of:

- 1) combining an oligonucleotide primer and a blocked nucleotide (or precursor thereof), in the presence of a chain extending enzyme,
 - 2) removing the blocking group,
 - 3) repeating the cycle, obvious to one of ordinary skill in this art with the '064 patent before them.
- The compounds disclosed in the examples made by this prior art process are seen to render the product by process claims obvious to one having ordinary skill in this art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare an oligonucleotide by the blocked method because the prior art discloses the method which comprises the steps applicant instantly claims. The Hyman patent provides the motivation to perform the instantly claimed steps in the same sequential order as instantly claimed to produce an oligonucleotide product. The secondary reference, the '064 patent which is also seen to be directed to the synthesis of polynucleotides using the same sequence of steps, with the same reactants to obtain the expected result.

Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to James O. Wilson, Primary Examiner in Art Unit 1623 at telephone number (703) 308-4624.



JAMES O. WILSON
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GROUP 1600